REMARKS

In accordance with the foregoing, claims 1, 5, 7, and 9 to 12 are amended and new claims 19-20 are presented. Claims 4 and 8 are cancelled herein without prejudice or disclaimer. No new matter is presented, and accordingly approval and entry of the foregoing are respectfully requested. Reconsideration is requested.

Claims 1, 3, 5, 7, 9-12, and 19-20 are pending and under consideration.

Claim Amendments

Claim 1 is amended herein to recite an optical transmission device including "a WDM port as a port for transmission and reception of a wavelength-multiplexed signal; and a wavelength multiplex/demultiplex unit, the wavelength multiplex unit comprising: a plurality of optical filters #1, #2, ..., #n which are provided in correspondence with a plurality of wavelengths, are daisy-chain connected, and have a loss characteristic weighted at the plurality of wavelengths in correspondence with a wavelength-dependent loss characteristic, and each of the plurality of optical filters has a function of a band-pass filter and an identical insertion loss; said wavelength multiplex/demultiplex unit further comprising an OSC filter through which separation or insertion of an OSC signal for maintenance control is performed comprising: in transmitting the wavelength-multiplexed signal containing main signals in n channels arranged in a wavelength range and the OSC signal, comprising: when the optical filter #k ($2 \leq k \leq n$) receives a signal in the channel number k at a predetermined wavelength from an inside of the optical transmission device, the optical filter #k allows the signal in the channel number k to pass through the optical filter #k, reflects the signals in the channel numbers k+1, k+2, ..., n sent from the optical filters #k+1, #k+2, ..., #n and sends the signals in the channel numbers k, k+1, k+2, ..., n to the optical filter #(k-1); when the optical filter #1 receives a signal in the channel number 1, the optical filter #1 allows the signal in the channel number 1 to pass through the optical filter #1, reflects the signals in the channel numbers 2, 3, ..., k, ..., n sent from the optical filters #2, #3, ..., #k, ..., #n and sends the main signals in the channel numbers 1, ..., n to the OSC filter; when the OSC filter receives the main signals in the channel numbers 1, ..., n, the OSC filter allows the main signals sent from the optical filter #1 to pass through the OSC filter and reflects the OSC signal that is generated by an inside unit of the optical transmission device, so that the main signals and the OSC signal are multiplexed to generate the wavelength-multiplexed signal that is transmitted through the WDM port, and in receiving the wavelength-multiplexed signal containing main signals in n channels arranged in a wavelength range and the OSC signal, comprising: when the OSC filter receives the wavelength-multiplexed signal entered through the WDM port, the OSC filter reflects the OSC signal to monitor, allows the main signals to pass

through the OSC filter and sends the main signals to the optical filter #1 when the optical filter #1 receives the main signals, the optical filter #1 allows main signals in only one of the channels at a predetermined wavelength to pass through the optical filter #1, and reflects the remaining main signals in the other (n-1) channels, and when the optical filter #k ($2 \leq k \leq n$) receives the reflected main signals in the (n-(k-1)) channels, the optical filter #k allows main signals in only one of the (n-(k-1)) channels at another predetermined wavelength to pass through the optical filter #k and reflects the remaining main signals in the other (n-(k-1)-1) channels, so that main signals in the channels at predetermined wavelengths are demultiplexed." Claim 5 is similarly amended.

Support for the amendments is found, for example, on page 11 line 22 to page 13 line 20, page 13 line 21 to page 15 line 14, and Fig. 2 of the specification. No new matter is presented, and accordingly approval and entry of the foregoing are respectfully requested.

ITEM 2: REJECTION OF CLAIMS 1, 3, 5, AND 7 UNDER 35 U.S.C. §103(a) AS BEING UNPATENTABLE OVER GERSTEL (U.S.P. 7,099,578) IN VIEW OF MIYATA ET AL. (U.S. PUB 2003/0123775) AND DESANTIS (US P 4858225)

In item 2 of the Office Action, the Examiner rejects claims 1, 3, 5, and 7 under 35 U.S.C. §103(a) as being unpatentable over Gerstel in view of Miyata and Desantis. (Action at pages 2-9). The rejection is traversed.

Applicants submit that *prima facie* obviousness is not established since features recited by each of the independent claims are not taught by the art relied on by the Examiner alone or in combination.

The Action concedes that Gerstel does not teach a wavelength multiplex/demultiplex unit that has plurality of optical filters with their functions. (Action at page 2). However, in support of the rejection of claim 1, the Examiner asserts that:

> Miyata teaches wherein said wavelength multiplex/demultiplex unit comprises a plurality of optical filters which are provided in correspondence with a plurality of wavelengths, are daisy-chain connected.... and have a loss characteristic weighted at the plurality of wavelengths in correspondence with said wavelength-dependent loss characteristic ... and Desantis disclose plurality of optical filters has a function of a band-pass filter and an identical insertion loss . . . it would have been obvious . . . to modify Gerstel's invention by using optical filter with band-pass filter function in optical transmission device for limiting the bandwidth to minimum necessary because it would allow the transmission device having desired bandwidth for conveying data at the desired speed and in the desired form to make reliable communication.

(Action at pages 2-3).

Applicants submit that *prima facie* obviousness is not established since features recited

by each of the independent claims are not taught by the art relied on by the Examiner alone or in combination.

Independent claim 1, for example, recites an optical transmission device including "a WDM port as a port for transmission and reception of a wavelength-multiplexed signal; and a wavelength multiplex/demultiplex unit, the wavelength multiplex unit comprising:
a plurality of optical filters #1, #2, ..., #n which are provided in correspondence with a plurality of wavelengths, are daisy-chain connected, and have a loss characteristic weighted at the plurality of wavelengths in correspondence with a wavelength-dependent loss characteristic, and each of the plurality of optical filters has a function of a band-pass filter and an identical insertion loss."

Independent claim 1, for example, further recites the wavelength multiplex/demultiplex unit including "an OSC filter through which separation or insertion of an OSC signal for maintenance control is performed."

Independent claim 1, for example, further recites the wavelength multiplex/demultiplex unit including "in transmitting the wavelength-multiplexed signal containing main signals in n channels arranged in a wavelength range and the OSC signal, comprising:

a)"when the optical filter #k ($2 \leq k \leq n$) receives a signal in the channel number k at a predetermined wavelength from an inside of the optical transmission device, the optical filter #k allows the signal in the channel number k to pass through the optical filter #k, reflects the signals in the channel numbers k+1, k+2, ..., n sent from the optical filters #k+1, #k+2, ..., #n and sends the signals in the channel numbers k, k+1, k+2, ..., n to the optical filter #(k-1);"

b) "when the optical filter #1 receives a signal in the channel number 1, the optical filter #1 allows the signal in the channel number 1 to pass through the optical filter #1, reflects the signals in the channel numbers 2, 3, ..., k, ..., n sent from the optical filters #2, #3, ..., #k, ..., #n and sends the main signals in the channel numbers 1, ..., n to the OSC filter;"

c) "when the OSC filter receives the main signals in the channel numbers 1, ..., n, the OSC filter allows the main signals sent from the optical filter #1 to pass through the OSC filter and reflects the OSC signal that is generated by an inside unit of the optical transmission device, so that the main signals and the OSC signal are multiplexed to generate the wavelength-multiplexed signal that is transmitted through the WDM port."

Independent claim 1, for example, further recites the wavelength multiplex/demultiplex unit including "in receiving the wavelength-multiplexed signal containing main signals in n channels arranged in a wavelength range and the OSC signal, comprising:"

a) "when the OSC filter receives the wavelength-multiplexed signal entered through the

WDM port, the OSC filter reflects the OSC signal to monitor, allows the main signals to pass through the OSC filter and sends the main signals to the optical filter #1;"

b)"when the optical filter #1 receives the main signals, the optical filter #1 allows main signals in only one of the channels at a predetermined wavelength to pass through the optical filter #1, and reflects the remaining main signals in the other (n-1) channels;" and

c) "when the optical filter #k ($2 \leq k \leq n$) receives the reflected main signals in the (n-(k-1)) channels, the optical filter #k allows main signals in only one of the (n-(k-1)) channels at another predetermined wavelength to pass through the optical filter #k and reflects the remaining main signals in the other (n-(k-1)-1) channels, so that main signals in the channels at predetermined wavelengths are demultiplexed."

The Action concedes that Gerstel does not teach a wavelength multiplex/demultiplex unit that has plurality of optical filters with their functions as recited by claim 1. (Action at page 2). Miyata merely teaches:

> [A]n optical filter including a substrate 26 and two optical filter units 28(#1) and 28(#2) formed on the substrate 26. Each of the optical filter units 28(#1) and 28(#2) is an AOTF having the configuration shown in FIG. 2. The first optical filter unit 28(#1) has an input port In(#1) and two output ports 48(#1) and 49(#1). The second optical filter unit 28(#2) has an input port In(#2) and two output ports 48(#2) and 49(#2). The input port In(#1) of the first optical filter unit 28(#1) serves as an input port of the optical filter 24. The output port 48(#2) of the second optical filter unit 28(#2) serves as an output port of the optical filter 24. The output port 48(#1) of the first optical filter unit 28(#1) is connected through an optical fiber 30 to the input port In(#2) of the second optical filter unit 28(#2). The input port In(#1) of the first optical filter unit 28(#1) is provided to input the input light 47 shown in FIG. 2. The output ports 48(#1) and 49(#1) of the first optical filter unit 28(#1) are provided to output unselected light 48L(#1) and selected light 49L(#1), respectively. The input port In(#2) of the second optical filter unit 28(#2) is provided to input the unselected light 48L(#1). The output ports 48(#2) and 49(#2) of the second optical filter unit 28(#2) are provided to output unselected light 48L(#2) and selected light 49L(#2), respectively.

(See, for example, paragraph [0032]).

Further, DeSantis merely teaches

> For the case where two adjacent channels separated by two passband filters have the same insertion loss at their edge frequencies.

(See, for example, col. 9, lines 35-36).

That is, features recited by independent claim 1 are not taught by even an *arguendo* combination of the art relied on by the Examiner.

In support of the rejection of independent claim 5, the Examiner asserts Miyata:

> it would have been obvious to a person of ordinary skill in the art at the time

> invention was made to modify Gerstel's invention by using optical filter with band-pass filter function in first and second optical transmission device for limiting the bandwidth to minimum necessary because it would allow the transmission device having desired bandwidth for conveying data at the desired speed and in the desired form to make reliable communication.

(Action at pages 6-7).

Applicants submit that *prima facie* obviousness is not established since features recited by independent claim 5 are not taught by the art relied on by the Examiner alone or in combination. Claim 5 recites an optical transmission system including "an optical transmission line as a transmission medium of a wavelength-multiplexed signal; a first optical transmission device being connected to an end of said optical transmission line.

Claim 5 recites a "wavelength multiplex unit comprising: a plurality of first optical filters #1, #2, ..., #n which are provided in correspondence with a plurality of wavelengths, are daisy-chain connected, and have a loss characteristic weighted at the plurality of wavelengths in correspondence with a wavelength-dependent loss characteristic, and each of the plurality of first optical filters has a function of a band-pass filter and an identical insertion loss, and a first OSC filter through which insertion of an OSC signal for maintenance control is performed; and a second optical transmission device being connected to another end of said optical transmission line.

Claim 5 further recites "a wavelength demultiplex unit comprising: a plurality of second optical filters #1, #2, ..., #n which are provided in correspondence with a plurality of wavelengths, are daisy-chain connected, and have a loss characteristic weighted at the plurality of wavelengths in correspondence with said wavelength-dependent loss characteristic, and each of the plurality of second optical filters has a function of a band-pass filter and an identical insertion loss, and a second OSC filter through which separation of the OSC signal.

Claim 5 further recites the wavelength demultiplex unit in "transmitting the wavelength-multiplexed signal containing main signals in n channels arranged in a wavelength range and the OSC signal at the wavelength multiplex unit," comprising:

a) "when the first optical filter #k ($2 \leq k \leq n$) receives a signal in the channel number k at a predetermined wavelength from an inside of the first optical transmission device, the first optical filter #k allows the signal in the channel number k to pass through the first optical filter #k, reflects the signals in the channel numbers k+1, k+2, ..., n sent from the first optical filters #k+1, #k+2, ..., #n and sends the signals in the channel numbers k, k+1, k+2, ..., n to the first optical filter #(k-1),"

b)"when the first optical filter #1 receives a signal in the channel number 1, the first

optical filter #1 allows the signal in the channel number 1 to pass through the first optical filter #1, reflects the signals in the channel numbers 2, 3, ..., k, ..., n sent from the first optical filters #2, #3, ..., #k, ..., #n and sends the main signals in the channel numbers 1, ..., n to the first OSC filter," and

c) "when the first OSC filter receives the main signals in the channel numbers 1, ..., n, the first OSC filter allows the main signals sent from the first optical filter #1 to pass through the first OSC filter and reflects the OSC signal that is generated by an inside unit of the first optical transmission device, so that the main signals and the OSC signal are multiplexed to generate the wavelength-multiplexed signal that is transmitted."

Claim 5 further recites the wavelength demultiplex unit in "receiving the wavelength-multiplexed signal containing main signals in n channels arranged in a wavelength range and the OSC signal at the wavelength demultiplex unit," comprising:

a) "when the second OSC filter receives the wavelength-multiplexed signal, the second OSC filter reflects the OSC signal to monitor, allows the main signals to pass through the second OSC filter and sends the main signals to the second optical filter #1,"

b) "when the second optical filter #1 receives the main signals, the second optical filter #1 allows main signals in only one of the channels at a predetermined wavelength to pass through the second optical filter #1, and reflects the remaining main signals in the other (n-1) channels," and

c) "when the second optical filter #k ($2 \leq k \leq n$) receives the reflected main signals in the (n-(k-1)) channels, the second optical filter #k allows main signals in only one of the (n-(k-1)) channels at another predetermined wavelength to pass through the second optical filter #k and reflects the remaining main signals in the other (n-(k-1)-1) channels, so that main signals in the channels at predetermined wavelengths are demultiplexed."

The Action concedes that Gerstel does not teach wavelength a multiplex/demultiplex unit has plurality of optical filters with their functions. (Action at page 6). Miyata merely teaches

> The selected lights 49L(#1) and 49L(#2) from the first and second optical filter units 28(#1) and 28(#2) are converted into electrical signals by the O/E converters 32(#1) and 32(#2), respectively. These electrical signals from the O/E converters 32(#1) and 32(#2) are input into correcting circuits 34(#1) and 34(#2), respectively. The correcting circuits 34(#1) and 34(#2) are provided to perform weighting for compensation for loss of the selected light from the second optical filter unit 28(#2) due to the fact that the selected light having a wavelength according to the RF frequency is output from the first optical filter unit 28(#1). . . .possible to commonly handle the electrical signals from the O/E converters 32(#1) and 32(#2) converted from the selected lights having different levels output from the first and second optical filter units 28(#1) and 28(#2). . . . a loss

> center wavelength in the whole of plural optical filter units can be controlled in the case of applying a common RF frequency to the plural optical filter units. Accordingly, higher-precision control is allowed as compared with the case of controlling the RF frequency by monitoring of a single optical filter unit.

(See, for example, paragraphs [0039] -[0042]). Further, DeSantis merely teaches

> For the case where two adjacent channels separated by two passband filters have the same insertion loss at their edge frequencies.

(See, for example, col. 9, lines 35-36).

That is, features recited by independent claim 5 are not taught by even an *arguendo* combination of the art relied on by the Examiner.

Summary

Since features recited by independent claims 1 and 5 (and respective dependent claims 3 and 7) are not taught by the cited art and *prima facie* obviousness is not established, the rejections should be withdrawn and claims 1, 3, 5 and 7 allowed.

Item 3 : REJECTION OF CLAIMS 9-12 UNDER 35 U.S.C. §103(A) AS BEING UNPATENTABLE OVER GERSTEL IN VIEW OF MIYATA AND DESANTIS (AS APPLIED FURTHER IN VIEW OF KAI ET AL. (U.S.P. 6,462,844)

In item 3 of the Office Action, the Examiner rejects dependent claims 9-12 under 35 U.S.C. §103(a) as being unpatentable over Gerstel in view of Miyata, Desantis, and Kai. (Action at pages 2-9). The rejection is traversed.

In support of the rejection, the Examiner relies on Kai's teaching, for example, of:

> each of said first and second wavelength multiplex/demultiplex units has a loss characteristic which compensates for half of said wavelength- dependent loss characteristic so that differences among different channels in loss caused by transmission of a wavelength-multiplexed signal are suppressed, and loss levels in the different channels in the wavelength-multiplexed signal are equalized (see column 10, lines 61-64; column 10, lines 4-7; column 11, lines 66 through column 12, lines 1-7; column 15, lines 15-20; FIG. 1 and FIG. 15 where in optical device has multiplex and demultiplex which compensate wavelength-dependent loss of transmission line in half and half function by using optical equalizing filter EQ on each side of the optical device.)

(Action at pages 9-10).

Applicants submit claim 5 patentably distinguishes over Gerstel, Miyata and Desantis for at least the reasons stated above. Applicants submit that nothing in Kai's disclosure cited by the Examiner, or elsewhere, alone or in combination with the other art relied on in the Office Acton, overcomes the deficiencies in support of an establishment of *prima facie* obviousness in overcoming features recited by independent claim 5.

Thus, dependent claims 9 to 12 including at least features of parent claim 5 also patentably distinguish over a combination of Gerstel, Miyata, Desantis and Kai.

Summary

Since features recited by dependent claims 9-12 are not taught by the cited art and *prima facie* obviousness is not established, the rejections should be withdrawn and claims 9-12 allowed.

New Claim

New claim 19-20 are presented to recite features in an alternative fashion. Claim 19-20 recite an optical transmission device including "an OSC filter through which separation or insertion of an OSC signal is performed and transmitting a wavelength-multiplexed signal containing main signals in n channels arranged in a wavelength range and the OSC signal, comprising: upon an optical filter #k ($2 \leq k \leq n$) receiving a signal in a channel number k at a predetermined wavelength from an inside of the optical transmission device, the optical filter #k allows the signal in the channel number k to pass through the optical filter #k, reflects signals in channel numbers k+1, k+2, ..., n sent from optical filters #k+1, #k+2, ..., #n and sends the signals in the channel numbers k, k+1, k+2, ..., n to optical filter #(k-1), and upon the OSC filter receiving the main signals in the channel numbers 1, ..., n, the OSC filter allows the main signals sent from optical filter #1 to pass through the OSC filter and reflects the OSC signal that is generated by an inside unit of the optical transmission device, so that the main signals and the OSC signal are multiplexed to generate the wavelength-multiplexed signal that is transmitted through the WDM port."

Support for new claims 19-20 is found, for example, in page 11 line 22 to page 13 line 20, page 13 line 21 to page 15 line 14, and Fig. 2 of the specification. No new matter is presented and, accordingly, approval and entry are respectfully requested.

These, and other, features of claims 19-20 patentably distinguish over the cited art, and they are submitted to be allowable for the recitations therein.

Conclusion

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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